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DICOM Bridge
Model DP1

User's Manual

Version 1.1

Table of Contents

1. INTRODUCTION 1

2. UNPACKING 1

3. PLACEMENT 1

4. CONNECTIONS 2

4.1. DICOM (ETHERNET) 2
4.2. P-831 2
4.3. MODEM 2
4.4. HAND HELD TERMINAL 2
4.5. POWER 2
4.5.1. Main Power 2
4.5.2. Handheld Terminal 2

5. CONFIGURATION 3

5.1. CHOICE OF METHOD 3
5.2. HANDHELD TERMINAL 3
5.2.1. Function Keys 3
5.2.2. Main Menu 3
5.2.3. Network Settings 3
5.2.4. Laser Imager Settings 4
5.2.5. Restart Menu 5
5.3. CONFIGURATION DISKETTE 6
5.3.1. Content 6
5.3.2. Backup Copies 6
5.3.3. Procedure 6
5.4. LASER IMAGER CONFIGURATION 6
5.4.1. Communication Settings 7
5.5. ETHERNET CONFIGURATION 7
5.6. DICOM CONFIGURATION 7

6. TROUBLESHOOTING 8

6.1. REBOOT, THE FIRST RESORT 8
6.2. DIAGNOSTIC TABLE 8

7. TECHNICAL SUPPORT 9

7.1. E-MAIL 9
7.2. FAX 9
7.3. TELEPHONE 9
7.4. MAILING ADDRESS 9

APPENDIX A: CAMERA CONFIGURATION 10

CAMERA CONFIGURATION FILE 11
BYPASS_DIGITAL_INTERFACE 11
CAMERA_TYPE 11
DIGITAL_DATA_PARITY 11

FORMAT 12
INTERFACE 12
INTERPOLATION_MODE 13
POLARITY 13
PORT_BITS 13
PORT_PARITY 13
PORT_SPEED 14
PORT_STOP_BITS 14
SERIAL_PORT 14

1. Introduction

The Plexar DICOM Print **DP1 Bridge** is designed to connect a P-831 compatible laser printer to a DICOM network. The network may contain a number of DICOM compatible image sources such as CT and MRI scanners and imaging workstations.

Within the DICOM network, the **DP1 Bridge** functions as a Print Management Service Class Provider. Additional DICOM related specifications may be found in the "DICOM Conformance Statement," which is included as an appendix in this manual.

Once installed and configured, the DICOM Print **DP1 Bridge** is designed to function without user intervention.

2. Unpacking

When unpacking, check the contents of the carton to make sure that you have the following parts:

- Plexar DICOM Print **DP1 Bridge** (the main box)
- Power Cord
- Ethernet (10 base T) Cord
- Modem Cord
- Configuration Diskette

3. Placement

The DICOM Print **DP1 Bridge** is small enough to be placed on the floor, next to the camera, on a table, or on a shelf. It should be placed indoors, at normal room temperatures, as specified below, and should be placed away from heat sources such as direct sunlight, radiators and heaters.

In order to minimize the length of cable required for printer hookup, the **DP1 Bridge** should be placed near the camera.

An ethernet cable for the DICOM network must be available to attach to the **DP1 Bridge**.

A standard 120VAC, grounded outlet is required. The use of an uninterruptable power supply (UPS) is recommended. If there is not one built in to the electrical system at your facility, one may be purchased and a computer or office supply company.

4. Connections

4.1. DICOM (ethernet)

The ethernet port will accept either 10-base-t or thin net (bnc) cable. Plug one end of the cable into the ethernet port, on the rear of the **DP1 Bridge**. Connect the other end to the network on which you run DICOM.

4.2. P-831

Prior to installation, one digital port on your laser printer must be available and must be configured to use the P-831 protocol. If you have any doubts about the configuration, you should contact the field service personnel or internal technician responsible for the camera.

The digital port of your laser printer has two cables. Connect the smaller 25 pin serial cable to the serial port 1 (COM1) on the back of the **DP1 Bridge**.

Connect the larger 37 pin parallel cable to the large connector in the card slot, also located at the back of the **DP1 Bridge**.

4.3. Modem

Connect the modem to an outside telephone line, using the port on the modem card located at the back of the **DP1 Bridge**.

4.4. Hand Held Terminal

Connect the DB9 serial connector to serial port 2 (COM2) on the back of the **DP1 Bridge**. An extension cable is provided, in order to facilitate connection and placement.

4.5. Power

Before connecting, verify that the power selector switch (just below the main power connection) is set for the correct Voltage for your location. Also verify that the DC adaptor for the handheld terminal is appropriate to your Voltage.

4.5.1. Main Power

Connect the power cord to the rear of the **DP1 Bridge** and a standard AC receptacle.

4.5.2. Handheld Terminal

Connect the DC adaptor that powers the handheld terminal. Then connect the cord from the adaptor to the center of the DB9 connector of the handheld terminal.

5. Configuration

5.1. Choice of Method

The handheld terminal is the simplest means for configuring the **DP1**. This 20 key terminal with a four character by 20-line LCD display can be used to edit the most common parameters via an interactive menu. The handheld terminal can also be used to send a test pattern (SMPTE) to the laser camera.

The configuration diskette may be used to edit the full camera default file when required.

5.2. Handheld Terminal

5.2.1. Function Keys

You may press the <F1> or <F2> key to leave the current parameter unchanged. The <F1> key will take you to the next entry. The <F2> key will return you to the main menu.

5.2.2. Main Menu

Press the number corresponding to your choice, and then the <ENTER> key.

- Network Settings 1
- Laser Imager Settings 2
- Restart Menu 3

5.2.3. Network Settings

If you do not know the IP Address, Subnet Mask or Default Gateway, please contact your network administrator.

5.2.3.1. Enter IP Address

Enter the 12-digit IP Address (leading zeroes in each group of three digits may be omitted). Include the dot after each three digits.

Example:

207.54.170.148 Or

207.054.170.148

Press the <ENTER> key when you are finished.

5.2.3.2. Enter Subnet Mask

The subnet mask is entered in a similar manor.

Example:

255.255.255.255

Press the <ENTER> key when you are finished.

5.2.3.3. Default Gateway

The default gateway is entered in a similar manor.

Example:

207.54.170.132 Or

207.054.170.132

Press the <ENTER> key when you are finished.

5.2.4. Laser Imager Settings

The settings must match your laser imager. Gather all of the required information from you technologist or field service engineer before starting the configuration process.

You may press the <F1> or <F2> key to leave the current parameter unchanged. The <F1> key will take you to the next entry. The <F2> key will return you to the main menu.

5.2.4.1. Baud Rate

Enter one of the following

- 300
- 1200
- 2400
- 4800
- 9600

Press the <ENTER> key when you are finished.

5.2.4.2. Parity

Enter the number corresponding to your choice.

- Odd 1
- Even 2
- None 3

Press the <ENTER> key when you are finished.

5.2.4.3. Data Bits

Enter one of the following

- 7
- 8

Press the <ENTER> key when you are finished.

5.2.4.4. Stop Bits

Enter one of the following

- 1
- 2

Press the <ENTER> key when you are finished.

5.2.4.5. Debug Logging

This item is your choice. There is no corresponding parameter to match on the imager. Debug logging should be turned off, except when trouble-shooting the system.

Enter one of the following

- Yes
- No

Press the <ENTER> key when you are finished.

5.2.4.6. Data Port Parity

Enter one of the following

- Odd 1
- Even 2

Press the <ENTER> key when you are finished.

5.2.5. Restart Menu

Enter the number corresponding to your choice.

- Restart 1
  This will cause the new values to be entered, and the system to restart.
- Test Print 2
  This will cause a standard SMPTE test pattern to be sent to the laser imager, after the new values are loaded. Then the system will be restarted.

Press the <ENTER> key when you are finished.

5.3. Configuration Diskette

5.3.1. Content

The configuration disk contains two files in the root directory:

- cameradf.dat The camera configuration file
- net.reg The ethernet configuration file

Both of these files must be edited to configure the **DP1 Bridge** for use.

5.3.2. Backup Copies

There are backup copies of these files in the backup directory of the diskette that may be copied and used if the originals become damaged. You may make as many copies as you wish of these files for backup use.

5.3.3. Procedure

1) Place th
2) e diskette in the 3.5" diskette drive of a personal computer (PC) having a 3.5" floppy disk drive.
3) Edit the two files according to the instructions in the following sections.
4) Remove the diskette from the PC and place it in the diskette drive of the **DP1 Bridge**.
5) Press the **reset** button on the front panel of the **DP1 Bridge**. The system should beep twice during this startup.
6) Reinsert the floppy in the drive of the PC. Use the editor to examine the file **install.log**. If there are any errors in the log, the installation must be repeated.
7) You may wish to "ping" the **DP1 Bridge** from a remote location to verify its presence on the network.
8) Store the configuration floppy in a safe place. You may make backup copies if you wish.

5.4. Laser Imager Configuration

A full description of the camera configuration file may be found in Appendix A. Typical values are placed in this file, on the configuration diskette. It will probably not be necessary to change many of them.

Most of the values in the camera configuration file must match those in the camera. You may wish to consult your service personnel for the camera in order to determine the

appropriate settings. If the camera is currently connected to an image source, then there may also be a useful list of settings in the source, which reflect that setup of the camera.

5.4.1. Communication Settings

The following settings control the serial communication between the **DP1 Bridge** and the camera. The **DP1 Bridge** settings must be set to match those of the camera.

- Port_Speed Baud Rate
- Port_Bits Data Bits
- Port_Parity
- Port_Stop_Bits

5.5. Ethernet Configuration

You must obtain an **IP Address, Subnet Mask** and **Default Gateway** from your network administrator. Replace the default values in the **net.reg** file with the new values.

5.6. DICOM Configuration

Consult the instructions for setting up a DICOM printer on your image source. You will need the following values for the **DP1 Bridge**.

- Port 104
- AE entity title Plexcam1

6. Troubleshooting

6.1. Reboot, the first Resort

If the system has stopped responding, particularly following a power outage or other shutdown, it should be rebooted. Simply use either the front or rear power switch to turn off the **DP1** and then turn it back on. System startup is automatic.

Caution:
All image files are erased on system startup. Images should not be removed from the sending modality until satisfactory prints are verified!

6.2. Diagnostic Table

Symptom	**Cause**	**Solution**
No beeps during configuration startup	Floppy not detected	Make sure floppy is properly inserted.
Three beeps during configuration startup	The network setup file is not new.	This is okay if you only wanted to change the **cameradf.dat** file. Otherwise, check the editing of the network file.
Four beeps during configuration startup	Other error	Call Plexar Technical Support.
No Power Light	Bad Power Cable	Check Cable.
	Bad Power Outlet	Check Voltage.
	Voltage Switch in wrong position	Toggle Voltage Switch. (just above power cable)
	Defective **DP1**	Call Plexar
Cannot Ping	Network Connection	Check Cables.
	Bad IP Address or Subnet Mask	Contact Network Administrator.
	Defective **DP1** network hardware	Call Plexar.

7. Technical Support

7.1. E-Mail

dp1@plexar.com

Please include the dial-in number for your **DP1** modem in your email.

7.2. FAX

(440) 248-8206

Please include the dial-in number for your **DP1** modem in your Fax.

7.3. Telephone

(440) 248-7650

Ask for **DP1** Technical Support.

7.4. Mailing Address

Plexar Associates, Inc.
Attn: **DP1** Technical Support
30275 Bainbridge Rd.
Suite A3
Solon, OH 44139

Please include the dial-in number for your **DP1** modem in your letter.

Appendix A:
Camera Configuration

Camera Configuration File

The camera configuration file (CAMERADF.DAT) contains numerous interface parameters. It is this file whose path is specified by the **lci_set_defaults_file_path** function. All of the parameters in this appendix are contained in the camera configuration file.
The fields within the configuration file may be edited to customize the equipment for a particular installation. In addition, multiple versions of the configuration file may be stored in different directories. The software may then be referenced to the different versions by changing the defaults file path.
The values marked with an asterisk (*) are supplied as defaults.

BYPASS_DIGITAL_INTERFACE

Allowed values:

0 * Normal Operation

1 Command communications only

Mode 1 is for debugging purposes only. Mode 0 must be used to make the system fully operational.

CAMERA_TYPE

Allowed values:

KODAK

KODAK_XLP

3M * This value should be used for any camera using the P831 protocol.

DIGITAL_DATA_PARITY

Allowed Values:

N * None

O Odd

E Even

FORMAT

3M

Allowed values:

1x1 *

2x2

3x2

4x3

Kodak

Allowed Values:

1x1 *

2x2

3x2

4x3

5x4

KODAK_XLP

Allowed values:

1x1 *

2x2

3x2

4x3

5x4

1x1,2x3

1x2,3x3

INTERFACE

Allowed values:

DIGITAL * Standard digital interface.

VIDEO For use when the camera is receiving data from a video output, instead of the Plexar interface board.

INTERPOLATION_MODE

3M

Allowed values:

INTERPOLATION See camera documentation for specifics.

REPLICATION *

KODAK

Not applicable.

KODAK_XLP

Allowed values:

BILINEAR See camera documentation for specifics.

CUBIC

CUBIC-ENH

NONE

REPLICATION *

POLARITY

3M

Allowed values:

NORMAL *

REVERSE

KODAK

Not applicable.

KODAK_XLP

Allowed values:

NORMAL *

REVERSE

PORT_BITS

Allowed values:

7

8 *

PORT_PARITY

Allowed values:

E * Even

O Odd

PORT_SPEED

Allowed values:

300

1200

2400

4800

9600 *

PORT_STOP_BITS

Allowed values:

1 *

2

SERIAL_PORT

Allowed values:

PORT1 COM1

PORT2 COM2

PORT3 COM3

PORT4 * COM4